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EFFECTS OF READING, STUDY SKILLS IMPROVEMENT, AND REDUCED CREDIT LOAD ON ACHIEVEMENT AND PERSISTENCE OF FAILURE PRONE COLLEGE FRESHMEN: A PILOT STUDY.
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The effect of training in reading-study skills and reduction of the academic credit load on the probability of academic success and the reduction of withdrawal rates for marginal college students was investigated. Subjects were 330 students, selected from the 1964-65 freshman class of West Virginia University, who had a predicted grade point average of 1.99 and below (on a 4.0 scale). Criterion measures included cumulative grade point averages, student grades converted to standard score basis, and student withdrawal rate per semester. Subjects were randomly assigned to four groups: (1) a reading-study skills class with reduced credit load, (2) a reading-study skills class with no reduction in credit load, (3) a reduced load with no special class, and (4) a control group with no special class and no reduction in credit load. At the close of the first semester each of the criterion measures showed a significant difference in favor of those groups taking the course. Significant interaction effects between the special course and the reduced load treatment were also shown. The group with only the reduced load treatment achieved at a level below the other three groups and had the highest rate of withdrawals. A bibliography and appendixes are included. (Author/WB)

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Project No. S-259
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U. S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
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Effects of Reading, Study Skills Improvement, and Reduced Credit Load on Achievement and Persistence of Failure Prone College Freshmen: A Pilot Study

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HEALTH, EDUCATION, AND WELFARE

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November 1966

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West Virginia University

Morgantown, West Virginia 26506

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Problem

The maximum development of human resources is a national problem of social, economic and educational significance. The development of human resources is especially pressing in the Appalachian region where educational attainments lag behind the national average, drop out rates in secondary schools continue to be high, and the proportion of secondary school graduates continuing their education beyond the high school is far below national averages and regional needs. Added to the above problems, and the focus of this study, is the high proportion of collegiate failures during the freshman and sophomore years.

A considerable amount of research has been conducted in the area of prediction of academic success; many studies have been made regarding the number, characteristics of, and reasons for student withdrawal from college. Yet, for both social and technical reasons, nearly every college and university accepts for admission a certain proportion of "marginal" students for whom academic failure and/or withdrawal can be stated in terms of "statistical probability." The literature, however, is surprisingly void of reports of experimental efforts to increase the probability of academic success and reduce failure rates in this "marginal" student group.

The aim of this research effort was to determine whether certain treatments suggested by the literature such as training in reading-study skills and reduction of the academic credit load could increase the probability of academic success and reduce withdrawal rates for marginal college students.

Objectives and Hypotheses

The objective of the pilot program reported herein was to evaluate the effectiveness of selected measures (or treatments) in the improvement of academic achievement and the reduction of withdrawal rates among entering freshman students whose predicted academic achievement was marginal (predicted grade point average of 1.99 or below on a 4.0 scale). Hypotheses to be tested were as follows:

(1) The assignment of failure prone first-term freshmen to a special class designed to improve reading and study skills and to ease the transition to the University environment will result in significant improvement in academic achievement.

(2) The assignment of failure prone first-term freshmen to a special class designed to improve reading and study skills and to ease the transition to the University environment will result in a significant reduction in the withdrawal rate.

Comment: Although covered in greater detail in subsequent sections, the sample consists of students selected on the basis of predicted achievement and not on the basis of any previously identified reading difficulty. It is known, however, that marginal students from the Appalachian region and elsewhere are likely to have underdeveloped verbal abilities which result, in part, from deprived home and school environments. It is also postulated that general reading improvement and study skill improvement, with an opportunity to develop close interpersonal relationships with other students and the staff members conducting the experimental class, will improve the chances for academic success of these marginal students.

(3) Reduction in the credit load carried by failure prone freshmen during their first year at the University will result in significantly improved academic achievement.

(4) Reduction in the credit load carried by failure prone freshmen during their first year at the University will result in a significant reduction in the withdrawal rate.

Comment: The effects of a reduced credit load on academic achievement have not been widely reported in the literature. Previous studies tend to be contaminated by self selection, or, to be conducted on students already in serious academic difficulty; the results have been inconclusive. The hypothesis concerns the effect of a controlled credit load on the achievement of first semester freshmen for whom marginal success is predicted.

REVIEW OF RELATED RESEARCH

This survey of research does not purport to present in its entirity any study or studies; rather, the literature was examined and summarized and only results and statements considered to be pertinent to the current effort are reported. We are concerned here only with a particular group of college freshmen--those predicted to be unsuccessful--and the steps which might be taken to improve the probability of success for these students. Therefore, the literature reviewed is related to this problem only.

I. ENROLLMENT, ATTRITION, PREDICTION

Reports from 935 accredited colleges and universities indicate the increase in college attendance; for the 1964-65 academic year, a 17.3 per cent increase in freshman enrollments occurred (Parker, 1965). The prospects for graduation of these freshmen are not, however, encouraging. This is substantiated by Carlson and Wegner (1965) who indicated that "approximately fifty per cent to sixty per cent of those students who enter four-year college degree programs fail to complete them". Eckland (1964), however, offered a different total; questionnaires were sent to 1332 male instate enrollees (1952 freshman class) at the University of Illinois, with a ninety-four per cent response. Findings indicated 417 or 70.2 per cent of the 594 dropouts returned to the University of Illinois or transferred to other institutions during the ten years following initial enrollment. Transfer records were verified. Taking into consideration all graduates, potential graduates (N=60), and a correction for non-respondents, 70.8 per cent of the sample may be considered ultimately graduated.

Attempts have been made to determine why so many students do not complete a college education. Cowhig (1963) points to information obtained in the October, 1959, Current Population Survey in which persons sixteen to twenty-four years of age who had dropped out of college were asked why they had dropped out. Male respondents listed lack of money or having a job as most important, while females listed marriage. Only 2.7 per cent listed poor grades. Cowhig concludes that "... economic reasons are secondary for college drop-outs and ... reasons indicating a lack of motivation (or ability) or a preference for some other activity are of greater significance." Three functions which identify differences between drop-outs and persisters were isolated by Ikenberry (1961): (1) intellective function, (2) cultural-sex function, and (3) social-background function with sex and achievement differences removed. Heilbrun (1956) indicated that personality factors may be important:

> ...it seems reasonable to expect that personality factors may make a significant independent contribution to student attrition, especially if dropout in the first college year is considered. The initial year often provides unique demands for academic study and classroom behavior as well as for a peer adjustment outside of the family environment; the established behavioral patterns of the adolescent should partially determine the ease or difficulty in adjusting to these facets of college life and in motivating continuation or dropout.

The results of Heilbrun's study indicate that such is true for high-ability students. Prediger (1965) attempted to relate persistence to biographical data for 1,710 male students entering the University of Missouri, Columbia campus, in September of 1961. He concluded, however, that "...biographical data may have very little to offer to the prediction of persistence among college males when ability and achievement are controlled."

In addition to identifying potential drop-outs, colleges today wish to predict the scholastic achievement of entering freshmen. High school grades emerge as the most accurate predictor of college achievement. One study (Michael, *et al*, 1962) reached three conclusions: (1) high school grade point average (GPA) is a better predictor of college success than College Entrance Examination Board (CEEB) scores ; (2) a least square combination of high school GPA and CEEB total (or CEEB differentially weighted parts) increases predictive validity; and (3) achievement of women may be predicted more accurately than that of men. Garrett (1949) listed the following in order of predictive power: high school scholarship, General Achievement Test scores, intelligence test scores, General College Aptitude Test scores, and Special Aptitude Test scores. Endler and Steinberg (1963) also found high school grade average the best predictor of first year college grade average. "Congruence between the values of the student and those of his dominant pre-college and present reference groups was found to be an important variable in the determination of academic achievement ...'Non-intellectual factors' such as values and motivations play as important a role in determining academic achievement as factors which may be said to be purely 'intellectual' ...Socio-economic status is a significant determinant of academic achievement"; these variables were disclosed by Simms (1962). Jones and Siegel (1962) indicated that "significant improvements in predicting college grades are made when data from each originating high school are treated separately." "Willingham (1963) was less optimistic than other writers; "...the pre-admission information was of no value in estimating sophomore performance at the end of the freshman year," although the said information did correlate .63 with freshman grades. High school rank predicts college GPA equally well over various levels of personal adjustment according to Watley (1965).

II. READING PROGRAMS

Reading and study skills courses have been recommended for those freshmen whose predicted GPA is marginal. Entwisle (1960) said, "There has been an increased tendency in the past ten years for colleges and universities to offer courses in study techniques. Some of these courses are devoted exclusively to problems connected with reading, but others define study problems very broadly and include even extensive individual counseling as part of a course." Having reviewed reports of twenty-two such courses, she concluded that: (1) such courses are usually followed by significant gains, especially when enrollment is voluntary; (2) observed gains tend to persist; (3) academic performance is improved by a modal half a letter grade. Let us look first at the reading programs.

Twenty-five per cent of college freshmen, as estimated by Anderson (1959), were unable to read well enough to do college work successfully; he cited poor reading as the largest single cause of failure at the college level. In a study of 8,249 students entering ten colleges in Oklahoma (1948 to 1952), Jones (1957) reported that 63 per cent of the students were below average in reading ability; he estimated that 80 to 90 per cent of college work depends on reading ability. Endler and Steinberg (1963), finding reading scores the second best predictor of first year college GPA, concluded that "...the most essential skill for all aspects of academic achievement is reading." However, Neville (1961) points out that reading ability influences test scores more than academic success.

Of reading courses, Summers (1962), after reviewing the literature concluded that "roughly 50 per cent of the programs use some type of evaluation, but few evaluations are done with control groups, and tests of significance of the results in terms of probability statements are rare....practically all reports indicate that improvement or gain was achieved for those participating." McDonald (1964) goes on to delineate the three most common methods of evaluation as being comparison of pre- and post-test scores, comparison of local reading gains with national norms, and comparison of test-retest data for remedial versus control groups.

He also listed seven sources of error: (1) failure to correct for regression toward the mean; (2) treating reading scores as empirically obtained indications of month-by-month progress; (3) assuming tests are valid and reliable measures of the most important aspects of reading; (4) spurious scores from the use of a single test over a wide educational level; (5) use of tests which can be answered from the subject's background; (6) errors in interpretation (such as using inapplicable norms); and (7) failure to select a comparable control group. McDonald concludes that 80 per cent of relevant research published in the last ten years has been contaminated by Hawthorne and placebo effects.

Whatever their particular limitations, many remedial reading courses are offered at the college level. Smith (1962) established a developmental reading program for freshmen with low-level reading ability; difference between experimental and control groups appeared in the areas of reading scores, GPA, attrition rate, and disqualifications. Beasley (1959) reported on a program at East Tennessee State College in which 144 students who scored below the fortieth percentile on the Cooperative English Test participated in thirty-six hours of class time and twenty-four hours of individual reading training. Chi square analysis of pre- and post-test scores on the Survey Section of the Diagnostic Reading Tests (DRT) showed significant gain in overall reading ability; reexamination three months after the course was completed indicated the significance of residual gain.

In 1957 (Lee, 1958), Morgan State College provided a reading program for all freshmen (N=443) as divided into levels by scores on the Cooperative Reading Test. Iowa Silent Reading Test scores showed an increase of thirteen points between the medians of the pre- and post-tests; therefore, it was concluded, college freshmen can and will make large gains in reading ability if training is provided.

Two semesters of a reading improvement course at West Virginia University (Ratliff, 1964) for thirty-one volunteers or referrals resulted in significant gains in reading comprehension, vocabulary, and reading rate as indicated by pre- and post-test scores on the Kelley-Greene Reading Comprehension Test and the DRT. Classes met twice a week with no credit being given for the course.

The University of Kentucky Counseling Service (Rose, 1964) used the Science Research Associates Laboratory IV course for a class meeting for one hour twice a week. Pre- and post-term DRT scores showed the following results: for the first semester, comprehension gain alone was significant; for the second semester, words-per-minute gain alone was significant; for the third semester, both of the above measures were significant (.01 and .05 levels respectively). This study is to be continued for examination of retention of gains and GPA.

The University of Maine (Volson, et al, 1964) alternated reading instruction and orientation discussions in the freshman orientation program. Analysis of covariance of scores on the Nelson-Denny Reading Test indicated significantly greater gains for the experimental group in all sub-tests except vocabulary. The reading program described by Clark (1963) showed a signficant difference in reading in favor of the group receiving the treatment (.05 level in raw scores; .01 level in growth scores). There was no signficant difference in mean GPA for two years, however.

Incomplete data are available for a four group experiment described by Cohen (et al, 1964). Group I was to be taught to comprehend general concepts and to treat knowledge as an associative whole prior to investigating particulars of a field; Group II was to receive a general education course plus remedial reading and counseling; Group III was to receive only the general education program; and Group IV was to have had no contact with the experiment. Subjects scored below the 19 or 20 percentile on the ACT, and at time of writing, 60 per cent were on probation.

Ray and Belden (1965) report that at Oklahoma State University, Nelson-Denny pre- and post-test scores for two groups taking a reading course were compared to determine whether gains were consistent among groups. Both groups showed comparable significant gains.

At the University of Michigan, seventy-four volunteers or referred students were given a special reading course while twenty-one others who tried to enroll but for whom there was no room were used as a control group. A group of freshmen was drawn at random for comparison as a representative group of freshmen. Thirty of the seventy-four taking the course were chosen randomly for a sixty week follow-up. The course lasted for ten weeks with two hours of class and one hour of individual help per week. The Cooperative Reading Test C2 and the Traxler High School Reading Test were employed. Conclusions presented were: (1) significant gains occurred in areas of reading emphasized in the course; (2) performance gains were maintained and perhaps increased after sixty weeks when continued practice was encouraged; and (3) the experimental group showed significant superiority in academic status over both other groups when study and examination skills were emphasized during the training.

The Reading and Study Skills Laboratory at the University of Maryland is described by Maxwell and Magoon (1962) as providing training to improve vocabulary and spelling, study skills, and reading in a voluntary, free, non-credit setting. No evaluation was presented.

Feinberg (et al, 1962) describes negative results of a reading course offered at City College of New York (Bernard M. Baruch School of Business and Public Administration) in which freshmen were required to attend a non-credit lecture and laboratory, reading and study course. Criteria were the Survey of Study Habits and Attitudes (SSHA), GPA, Appel Personality Inventory, and SAT verbal section. "On the basis of the statistical analysis of data relating to test scores and college grades, it can be concluded that the Study Course did not produce any statistically significant changes. The effect of the course, if any, may reflect itself in the students' later development. However, the data available at the end of the first semester indicated a clear lack of effectiveness." Resistance developed because of the mandatory, non-credit nature of the course and students were hostile and uncooperative when taking the post-test.

Studies of other variables shed light on the results of reading improvement courses. Gladfelter (1945) in a study of Temple University freshmen, found that with no special instruction each group made significant gains in reading rate and comprehension as tested by the Cooperative English Test and the Iowa Reading test. As a result of the regression effect, students who do poorly on a pre-test are more likely to appear to improve their reading skills during the freshman year than are those who rank above the group mean. In the normal freshman experience, it is concluded, a group of students can be expected to improve reading skills to the same extent they improve their English ability. Kammann (1963) reported that:

> The correlations among college aptitude (SAT and ACT), study habits (SSHA), initial reading performance (DRT), and reading improvement (DRT gains) were investigated on each of two groups of college freshmen. Four general trends appeared in the data: (a) study habits were not related to aptitude, or to reading, or to reading improvement; (b) students high in aptitude or high in reading level (comprehension and vocabulary) did not improve in reading level; (c) none of the variables were related to improvement in reading rate; (d) improvement in one reading skill did not contribute appreciably to improvement in any other reading skill.

Hinton (1961) compared honor students and reading course volunteers and concluded that both groups are more highly motivated to graduate than the average college student since after three semesters 75 and 71 to 77 per cent of the two groups respectively were still in school as compared to the national drop-out rate. Walter (1957) determined that "students who differ in academic achievement motivation as inferred from fantasy productions" do not show "significantly different performance in learning reading and note-taking skills." Wood (1961) reported that attrition in reading courses is related to course characteristics rather than personality characteristics of the drop-outs.

Some of the above reports refer to the persistence of effects of reading courses. Other studies tend to show that skills learned are persistent. Hill (1961) reported that "Students who receive special training in reading skills continue to develop these skills after the termination of training." Indeed, Bloomer (1962) suggests that "...maximal gain is commonly not achieved until some time after the conclusion of the program." In still another study, 179 male freshmen were given a voluntary reading program (Kingston and George, 1955) of two, fifty minute periods per week of class and one individual session per week and compared as juniors to 274 students who had not taken the class, specifically to test residual effects. It was concluded that training assisted academic achievement when the curriculum was largely linguistic in nature.

III. HOW-TO-STUDY COURSES

The above studies examined the immediate and persistent effect of reading or reading and study skills courses. Some courses, however, must be classified more particularly as how-to-study courses. DiLorenzo (1964) discusses one such course;

> "The effectiveness of a 'how to study' course for nonprobationary students was evaluated by comparing the changes in QPI Quality Point Index) of an experimental and two control groups. In addition, the discriminating effects were examined in terms of college year, scholastic aptitude, past average, and study habits rating.
>
> The statistical evidence indicated that the training influenced improvement for the experimental group, the juniors as a subgroup, the subjects with the lower study habits ratings, and those with higher past academic averages."

Behrens (1935) gave freshmen on probation (1930-31) 5 hours per week of training with no credit. Matching seventy-one pairs from the experimental and control groups, he found greater persistence and fewer disqualifications among the experimental subjects; the greatest difference in GPA occurred two quarters after completion of the course. At the University of Idaho (Crawford, 1923), 181 students were given two lectures per week on how to study and results were examined after six and twelve weeks; "there were only one-half as many of the special class put on probation after six weeks, and twice as many of those removed from probation after twelve weeks, as compared with all other students in the university. ...serious or persistent failures [those who withdrew while on probation or remained on probation after twelve weeks] were only one-fifth as numerous in the special class as in the rest of the university." Apparently study habits do not improve without such special training, for Brown (1964) pointed out that study habits and attitudes as measured by the SSHA became consistently worse from pre- to post-test when no training was given.

IV. COUNSELING

Counseling programs are often included in reading and study skills courses. Punke (1962) pointed out why counseling might help: "Most individuals will accomplish more if encouraged and guided, particularly when bewildered or at the end of the rope..." A study by Galotto (1961)"...revealed that a psychoeducational approach may be helpful in improving reading ability and, to some extent, attitudes toward reading personal adjustment, and classroom behavior." Ragnor (*et al*, 1959) reported the results of an initial attempt to develop an inventory based on self-descriptive statements of feelings and attitudes related to reading skills; reading clinic cases differed from non-clinic cases in content and emotional tone of statements. Attitude statements were found to predict reading ability as well as statements about reading skills, and the entire inventory predicts reading ability as well as intelligence tests do. It would seem, therefore, that counseling to improve attitudes toward reading would be efficacious.

Along the same lines, studies have been carried out to determine how personality may be related to reading ability. Raygor and Work (1964) compared Minnesota Multi-phasic Personality Inventory profiles for volunteers in a reading course and a random sample of freshman at the University of Minnesota. "Comparison by means of high point codes and individual scales showing significant differences between groups indicate that: (1) male reading center volunteers tend to be less well adjusted than typical freshmen particularly with regard to social skills; (2) female reading center volunteers tend to be somewhat better adjusted than typical female freshmen." The SSHA and the College Inventory of Academic Adjustment were used by DeSena (1964) with the result that "Both instruments reveal that the difference between academically successful and failing students of comparable intelligence may be mainly one of certain personality characteristics such as attitude set and motivation toward scholastic activities and should not be attributed to study skills alone." Englander (1960) devised an inventory of attitudes related to reading, study skills, taking examinations, and use of leisure time. Responses of good readers differed from responses of poor readers, and positive changes in affect occurred among poor readers after a reading improvement course.

Gibbs (1965) compared passing and failing groups of Australian college students with the following results: (1) a) unsuccessful students show characteristics of inadequate personal-social orientation;b) a factor relating to sub-cultural social skills underlies passing and failing at the University level; (2) failure characteristics are heterogeneous and often non-linear; failure is not due to simple and temporally static causes; (3) failure is not associated with neuroticism but with failure in social orientation; (4) fails differ from passes in extraverted over-reactivity, low motivation for study, and social maladjustment; (5) failure tends to be persistent suggesting a "failure orientation" which may be related to sub-cultural clash between social skills, habits, attitudes, and relations appropriate to the backgrounds of these students and those appropriate to a university environment. These results are pertinent to the present discussion in the sense that we are dealing with marginal students.

Knight (1962) rejected "the hypothesis that low achievers are more influenced by social-emotional factors than are high achievers," the social-emotional factors being elements related to the social climate that might influence feelings. More specifically related to reading improvement programs is Anderson's (1962) study relating psychological measures to reading gains. Rorschach M-Scale scores served as significant negative predictors for male gain in comprehension. Levels of aspiration were significant predictors of female gain in rate and were highly significant negative predictors for male and female gain in comprehension. Levels of expectation served as highly significant positive predictors of male gain in rate and female gain in comprehension, and as highly significant negative predictors of male gain in comprehension.

V. LOAD AND PROBATION

None of the literature included in the survey was concerned with the effects of initial load reduction for marginal freshmen. One study was found concerning the effects of load reduction in general, and it was reported by Hayes (1962) on students at the University of Portland. It is interesting to note that at that institution, only 19 per cent of students achieving below 2.0 during their first semester ever graduated. Hayes found that "by increasing the study load for the A students the predicted GPA is reduced whereas for the D student it is increased." He concluded that counselors should "Avoid reducing the study load of the average or below average students as a means of improving probability of success, as the opposite will likely happen." Another study from the same institution (Schmelzler, 1964) indicated another, possible more fruitful, approach. "It seems evident that students progress academically after acquiring probationary status in the first semester...Over one-half, or 68 per cent, improved their cumulative GPA's at the University after being placed on probation following their first semester. In addition, over 36 per cent of those going on probation graduated."

VI. CONCLUSIONS

From the literature reviewed several conclusions may be drawn:

(1) Freshman enrollments are increasing rapidly, but the percentage of withdrawals remains the same with no single factor or group of factors being clearly responsible for attrition.

(2) High school grade average alone or in combination with aptitude test scores is the best single predictor of academic achievement in college, although other variables such as motivation and socio-economic status are related to such achievement.

(3) Reading and study skills courses are widely offered and usually result in persistent gains in reading ability and academic achievement of students, especially when such courses are offered on a voluntary basis.

(4) Counseling is often included and should be helpful in reading and study skills courses since many psychological variables are related to these skills.

(5) Little evidence is available for determining whether load reduction is beneficial to marginal students.

Thus, a course in reading and study skills, along with counseling (to ease the transition to college life) and load reduction might be expected to improve the probability of academic success for entering freshmen for whom marginal success is predicted from high school grades and American College Test scores. The study reported herein was designed to test this proposition.

Procedures

I. THE SAMPLE

The sample was selected from the 1964-65 entering freshman class of West Virginia University. On the basis of a previously developed and cross validated predictive formula using high school grades and American College Test scores, students were separated into two groups:

(1) freshmen with a predicted first year grade point average of 2.00 (C) and above;

(2) freshmen with a predicted first year grade point average of 1.99 and below.

The sample of the study consisted of all entering freshmen who met the conditions set forth below:

(1) on the basis of high school grades and American College Test scores, had a predicted freshman grade point average of 1.99 or below;

(2) by reason of high school achievement in English and performance on the ACT English subtest, were not required to take the remedial English course;

(3) were enrolled for at least 10 or more credits.

Thus, students expected to succeed in college, students whose treatment might be contaminated by requirement of the remedial English program, and students enrolled part-time were excluded from the study. (A small group of students taking the remedial English course was selected to participate in the training in order to fill sections of the course; however, data for these students and for a comparable control group will be analyzed separately from data for the sample proper.)

The total sample consisted of 330 freshmen, of whom 217 (66 per cent) were males and 113 (34 per cent) females. The mean predicted grade point average of this group was 1.74. Source states of the students are indicated in Table I below. Most of the students were from West Virginia, and almost all were from the Appalachian Region.

TABLE I

Source States of Sample (N=330)

State	Number	Per Cent	State	Number	Per Cent
West Virginia	229	69.4	New York	2	00.6
Pennsylvania	71	21.8	Virginia	2	00.6
New Jersey	12	03.6	District of Columbia	1	00.3
Maryland	5	01.5	Indiana	1	00.3
Ohio	3	00.9	Minnesota	1	00.3
Connecticut	2	00.6	Missouri	1	00.3

Majors of the students are indicated in Table II. The largest major group was General Studies suggesting some indecision on the part of the selected students as to major field of preference. Arts and Sciences majors comprised the second largest group, representing a scattering of more specific areas of concentration.

TABLE II

Major Areas of Study of Sample (N=330)

Major	Number	Per Cent	Major	Number	Per Cent
General Studies	98	29.7	Physical Education	16	04.8
Arts and Sciences	86	26.1	Home Economics	15	04.5
Engineering	28	08.5	Agriculture	13	03.9
Commerce	27	08.2	Journalism	4	01.2
Education	19	05.8	Music and Drama	2	00.6

Ability was measured by means of the Chicago Non-Verbal Mental Abilities Test, and initial reading level was measured by means of the California Achievement Tests, Advanced, and the Diagnostic Reading Test, Survey Section. These scores were available only for the groups assigned to the Reading Study Skills Course, but probably would not differ significantly from scores for the control groups, since the t-test indicated no significant difference in predicted grade point averages between experimental and control groups. Summary data of the test results are contained in Table III.

TABLE III

Summary of Initial Test Data for Subjects
Assigned to Reading, Study Skills Course

Test	Chicago Non-Verbal Mental Abilities Test, by Range	California Achievement Tests, Advanced, Total Score by Grade Level	Diagnostic Reading Test, Survey Section, Total Score by %ile
Number	142	142	142
Median	Superior	13.2	24
Mean		12.9	Inc.
Range	Low Average - Very Superior	10.4-15.1	Inc.

Table IV includes summary data of American College Test scores of subjects for whom scores were immediately available. The mean and median percentiles for the group are low, as expected, but the range indicates wide variation in ability as measured by this test.

TABLE IV

Summary of American College Test Score Data for Sample by
National Percentile Comparison

Group*	I	II	III	IV	Total
Number	72	83	58	92	305
Median	32	32	39	39	39
Range	08-69	05-75	08-82	08-95	05-95

*(See experimental design Figure 1 below for descriptions of groups.)

II. EXPERIMENTAL DESIGN

The experimental design of the study is shown in Figure 1.

Figure 1

Experimental Design

	Organized Reading, Study Skill Impr.	No Organized Reading, Study Skill Impr.
Reduced Load	Group I: Class Reduced Load	Group III: No Class Reduced Load
No Reduced Load	Group II: Class No Reduced Load	Group IV: No Class No Reduced Load

As may be seen in Figure 1, the design is a simple 2 x 2 factorial design. Groups I and II received the reading and study skills improvement treatment (to be described below) while this treatment was not given Groups III and IV. A reduced load treatment was administered to Groups I and III but not administered to Groups II and IV.

III. ASSIGNMENT OF SAMPLE TO EXPERIMENTAL GROUPS

Students in the sample (as previously defined) were assigned to experimental groups by computer on a random basis. Assignment to groups involved a special computer routine. Total sample size was 330 with Group I N=78, Group II N=89, Group III N=64, Group IV N=99.

IV. TREATMENTS

Experimental Class. The experimental class had three primary objectives.

An attempt was made to describe the relative emphasis to be given each of the objectives through the use of percentage figures. These were stated as follows: (1) to increase reading competence of subjects (70 per cent); (2) to improve study skills of students (15 per cent); and (3) to smooth the academic and social transition from a high school to a university environment (15 per cent).

A reading specialist, in charge of administering the experimental class treatment, provided the coordination necessary to ensure some uniformity in treatment among sections. Instructional techniques included formal or traditional instructional experiences, laboratory experiences (reading), informal discussions and individual counseling. The class met 3 hours each week and counted as the equivalent of 3 credits in the student's total load. Appendix A (attached) gives a more detailed report on the procedures followed in the experimental class.

Reduced Load. Load reduction was defined as follows: controlled or reduced load was defined as no more than a 12 credit hour load plus physical education and ROTC if elected by the student. "No load reduction" was defined operationally: the student was free, within the limits of existing University policy, to select the class load he wished. In effect, the load reduction was for one, or at the most two courses.

Thus, the study did not purport to establish a linear relationship between credit load and achievement. The question asked was whether failure-prone freshmen, limited to a credit load of 12 or less credits during the first semester would achieve at higher levels and withdraw in fewer numbers than failure-prone freshmen who were free to choose their own credit loads.

Each of the treatments discussed above (Experimental Class and Reduced Load) was administered during the first semester of the freshman year. Reduced load treatment terminated at the end of the first semester for those students who achieved a 2.0 first semester GPA or above; special clinical assistance continued through the second semester for those students who achieved a 1.9 or below at the end of the first semester.

V. ACHIEVEMENT CRITERIA

The use of raw grade point averages as a measure of achievement has several limitations in a study such as this. Naturally there is the problem of grade reliability which, of course, is a problem in any appraisal system. A more important problem is that of variation among courses and departments in grading standards. It is well known that, over time, certain courses tend to give a greater proportion of low grades (or high grades) than other courses. A mandatory load reduction or the requirement of a special course may result in a systematic bias in the selection of course schedules and, therefore, a biased achievement criteria if raw grade point averages are used.

Therefore, a standardized grading system was used. Computation utilized the usual standard score approach, where $SG = \frac{X_i - M}{SD}(20) + 100$ in which

SG = standard grade

X_i = subject's grade in course X

M = mean grade in course X

SD = standard deviation of grades in course X

For a given course, the standard grades will have a mean of 100 and a standard deviation of 20.

The computation of the students' standardized achievement averages adopted the standard grades to the normal weighted grade average system, which in this case would be

$$SAA = \frac{(SG_x \text{ X } CR_x) + (SG_y \text{ X } CR_y) + \ldots (SG_n \text{ X } CR_n)}{CR_x + CR_y + \ldots CR_n}$$

where:

SAA = standardized achievement average

SG_x, SG_y, SG_n = standard grades in courses x, y, and n respectively

CR_x, CR_y, CR_n = credit value of courses x, y, and n respectively

The net effect of this procedure was to minimize the bias resulting from unintended changes in student schedules induced by the experimental treatments.

The appraisal of the student's achievement was based on his standing relative to other students in his courses. Such a procedure eliminated the bias which could have been introduced if certain courses with atypical grading standards were omitted from student schedules in disproportionate numbers.

Multiple criteria were used to test each hypothesis. Hypotheses 1 and 3 deal with academic achievement and were tested at the following criteria points: (1) end of first semester, freshman year; (2) cumulative average, freshman year; and (3) cumulative average, sophomore year.

Student withdrawal from the University before any grades were awarded was treated as a "0" average. Standardized achievement averages for the last completed criteria period were used as the cumulative average in subsequent semesters in cases where the student withdrew from college.

Hypotheses 2 and 4 concerned withdrawal rates and were based on multiple criteria points. These were as follows: withdrawal

(1) during the first semester, freshman year;
(2) during the second semester, freshman year;
(3) during the first semester of the sophomore year;
(4) during the second semester of the sophomore year;
(5) beginning of the first semester of the junior year.

Withdrawal from West Virginia University followed by subsequent readmission was not considered as withdrawal.

Standard descriptive statistical techniques were used to describe the sample and the collected data. Analysis of variance among means of unequal groups was to be used to test hypotheses 1 and 3; chi square analysis was used to test hypotheses 2 and 4.

Results

Because the first and the third hypotheses are concerned with possible improvement in academic achievement and the second and fourth hypotheses are concerned with any possible reduction in the withdrawal rate, the analysis will be presented in that order.

Tables V through X present the results of the analysis of variance computed on the two achievement criteria, Standardized Achievement Average (SAA) and Grade Point Average (GPA). Also shown are the rankings of group means and significant results, if any, of the Duncan's Multiple Range Test (DMRT). In the analysis of variance, the reduced load was considered treatment A and the Guided Studies class was considered treatment B. Group numbers of the experimental groups correspond to the numbers assigned to each group and shown in Figure 1 on page 36

Three criterion points were used: the end of the first semester, the end of the first year, and the end of the second year. Cumulative achievement averages were used. In each case, achievement averages for students who withdrew were included in subsequent analysis with achievement performance computed according to the cumulative achievement record at the close of the last semester completed.

Analysis at the close of the first semester yielded significant differences in favor of the Guided Studies treatment when the criterion of SAA was applied. When the normal GPA criterion was applied, significant differences were noted for the Guided Studies treatment and also for the interaction. Examination of the ranked means indicated that the difference in terms of both SAA and GPA favored the two experimental groups receiving the Guided Studies class treatment. The experimental group which received only the reduced load treatment fell behind all other groups in terms of achievement as represented by SAA and GPA criterion.

By the end of the freshman year, achievement scores showed no significant difference when SAA was applied as a criterion. When the normal GPA criterion

Table V

Results of Analysis of Standardized Achievement Average for First Semester, Freshman Year

Analysis of Variance

Source	df	SS	MS	F	Significance
Total	319	50773.296			
Among Groups	3	1191.211	397.070	2.531	n.s.
Reduced Load	1	222.926	222.926	1.421	n.s.
Guided Studies	1	935.935	935.935	5.965	$P < .05$
Interaction	1	103.891	103.891	.662	n.s.
Error	316	49582.086	156.905		

Ranked Means

Duncan's Multiple Range Test

Groups	N	Mean	
II Class; No Reduced Load	64	93.516	Differs from Group III at .05 Level.
I Class; Reduced Load	77	93.130	Differs from Group III at .05 Level.
IV No Class; No Reduced Load	97	91.227	
III No Class; Reduced Load	82	88.537	

Table VI

Results of Analysis of Grade Point Average for First Semester, Freshman Year

Analysis of Variance

Source	df	SS	MS	F	Significance
Total	326	175.630			
Among	3	14.386	4.795	9.606	P $<$ .05
Reduced Load	1	.577	.577	1.156	n.s.
Guided Studies	1	10.459	10.459	20.951	P $<$ .01
Interaction	1	3.649	3.649	7.310	P $<$ .01
Error	323	161.244	.499		

Ranked Means

Duncan's Multiple Range Test

Groups	N	Mean	
I Class; Reduced Load	77	2.081	Differs from Groups III and IV at .01 level.
II Class; No Reduced Load	64	1.921	Differs from Group III at .01 level.
IV No Class; No Reduced Load	98	1.779	Differs from Group III at .01 level.
III No Class; Reduced Load	88	1.511	

was applied, significant differences were found corresponding to the first semester's findings. That is, the guided studies class treatment and the interaction were shown to be significantly related to achievement. Once again it was found that the two experimental groups enrolled in the special guided studies class ranked highest in terms of mean GPA performance. Also in line with first semester findings was the low position of the reduced load experimental group.

Cumulative achievement scores for the end of the second or sophomore year indicate findings similar to those found in earlier semesters. No significant differences were found when SAA was used as the achievement criterion. Use of the normal GPA as the criterion of achievement resulted in a significant interaction. When group mean GPA's were ranked, the control group and the Guided Studies and reduced load experimental group had significantly higher means than the group which received only a reduced load. Interestingly, for both SAA* and GPA, the control group obtained the highest mean achievement at the close of the second semester and the group receiving only the reduced load treatment obtained the lowest GPA and SAA* mean.

In general, the experimental groups receiving the Guided Studies class treatment obtained the highest achievement means at the earlier criterion points during the freshman year. This apparent advantage was not in evidence by the close of the sophomore year. Apparently, a reduced or controlled credit load, when not combined with the special class, had a negative influence on student achievement and continued to hold that position throughout.

Figure 2 and Figure 3 present graphically the ranked SAA and GPA group means for each semester. Examination of these figures will allow the progress of each of the groups to be traced in comparison to the others. In general, for both criteria, Group I and Group II, the two Guided Studies groups, tended to drop in achievement over time. Achievement of the control group remained reasonably

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*The comparative ranks of groups on GPA and SAA criteria were the same. SAA differences, however, were not significant.

Table VII

Results of Analysis of Standardized Achievement Cumulative Average for Freshman Year

Analysis of Variance

Source	df	SS	MS	F	Significance
Total	318	39205.711			
Among	3	586.274	195.425	1.594	n.s.
Reduced Load	1	308.310	308.310	2.515	n.s.
Guided Studies	1	303.528	303.528	2.476	n.s.
Interaction	1	25.576	25.576	.209	n.s.
Error	315	38619.437	122.601		

Ranked Means

Duncan's Multiple Range Test

Groups	N	Mean	
II Class; No Reduced Load	63	92.317	n.s.
I Class; Reduced Load	77	90.987	n.s.
IV No Class; No Reduced Load	97	90.928	n.s.
III No Class; Reduced Load	82	88.451	n.s.

Table VIII

Results of Analysis of Grade Point Cumulative Average for Freshman Year

Analysis of Variance

Source	df	SS	MS	F	Significance
Total	326	138.954			
Among	3	7.536	2.512	6.174	$P < .01$
Reduced Load	1	1.248	1.248	3.067	n.s.
Guided Studies	1	4.700	4.700	11.553	$P < .01$
Interaction	1	1.934	1.934	4.752	$P < .05$
Error	323	131.418	.407		

Ranked Means

Duncan's Multiple Range Test

Groups	N	Mean	
I Class; Reduced Load	77	1.936	Differs from Group III at the .01 level.
II Class; No Reduced Load	63	1.881	Differs from Group III at the .01 level.
IV No Class; No Reduced Load	99	1.799	Differs from Group III at the .01 level.
III No Class; Reduced Load	88	1.542	

Table IX

Results of Analysis of Standardized Achievement Cumulative Average for End of Sophomore Year

Source	df	Analysis of Variance SS	MS	F	Significance
Total	308	48435.611			
Among	3	412.436	137.479	.873	n.s.
Reduced Load	1	150.202	150.202	.954	n.s.
Guided Studies	1	.170	.170	.001	n.s.
Interaction	1	261.871	261.871	1.663	n.s.
Error	305	48023.176	157.453		

Ranked Means

Duncan's Multiple Range Test

Groups	N	Mean	
IV No Class; No Reduced Load	93	90.860	n.s.
I Class, Reduced Load	74	89.703	n.s.
II Class, No Reduced Load	62	89.016	n.s.
III No Class; Reduced Load	80	87.825	n.s.

Table X

Results of Analysis of Grade Point Average for Cumulative Sophomore Year

		Analysis of Variance			
Source	df	SS	MS	F	Significance
Total	330	206.352			
Among	3	5.474	1.825	2.970	$P < .05$
Reduced Load	1	1.033	1.033	1.682	n.s.
Guided Studies	1	.575	.575	.937	n.s.
Interaction	1	3.969	3.969	6.461	$P < .05$
Error	327	200.878	.614		

Ranked Means

Duncan's Multiple Range Test

Groups	N	Mean	
IV No Class, No Reduced Load	99	1.823	Differs from Group III at .05 level.
I Class, Reduced Load	78	1.820	Differs from Group III at .05 level.
II Class, No Reduced Load	64	1.678	
III No Class, Reduced Load	89	1.521	

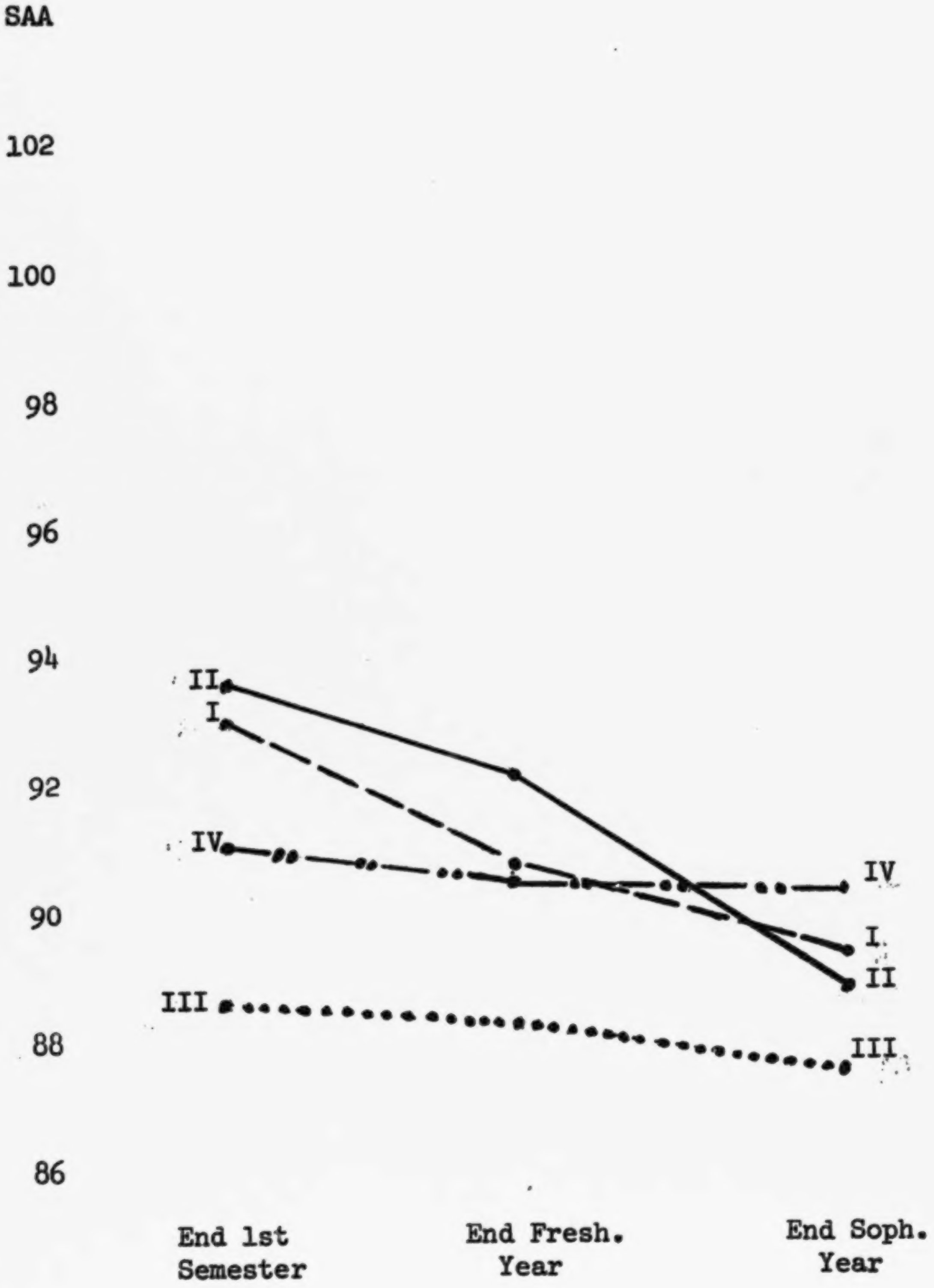

Figure 2. Standardized Achievement Average of Experimental and Control Groups, End of First Semester, End of Freshman Year, End of Sophomore Year

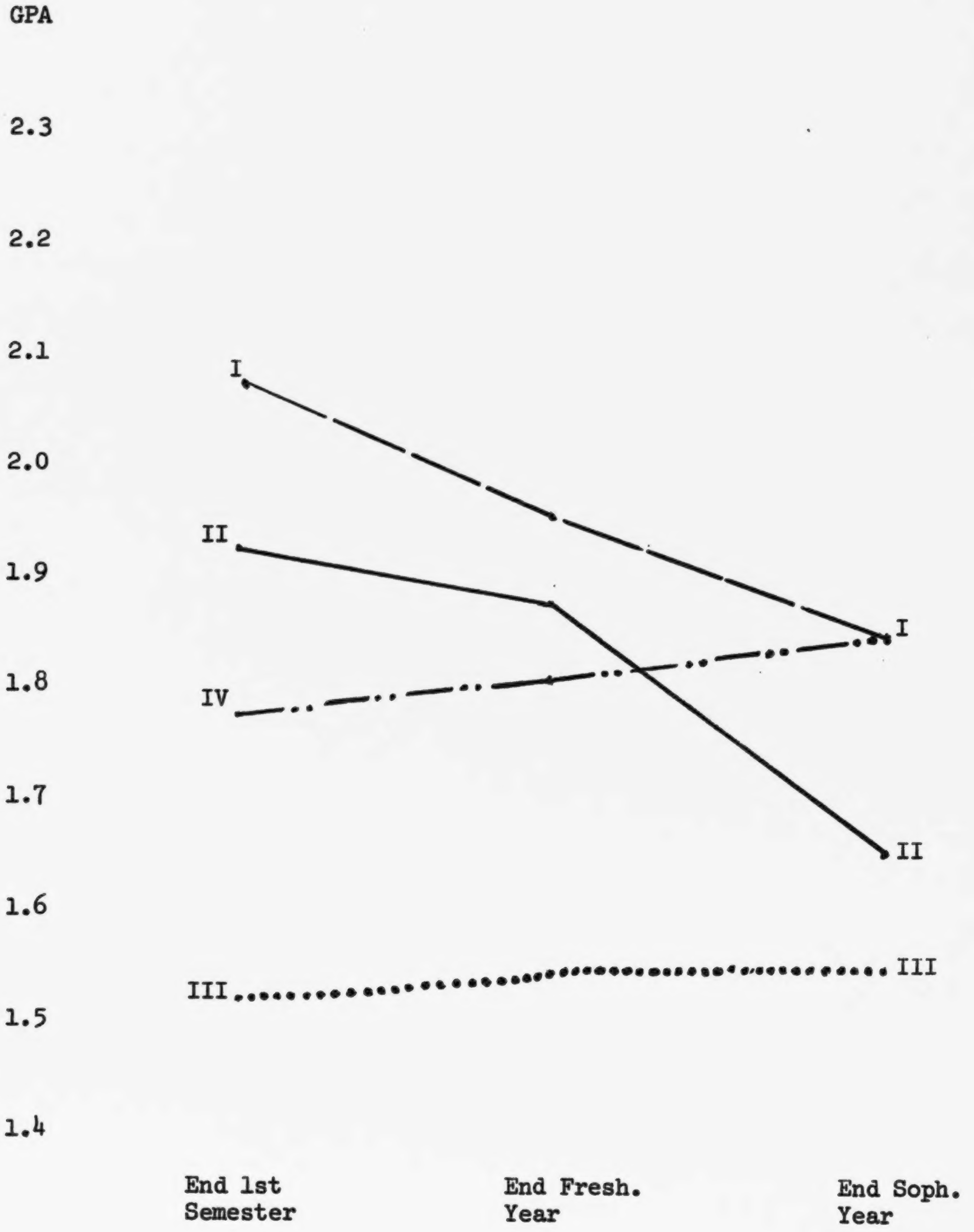

Figure 3. Grade Point Average of Experimental and Control Groups, End of First Semester, End of Freshman Year, End of Sophomore Year

stable over time. The reduced load group began and remained at a low achievement level throughout the experiment.

Variation in actual value of the mean score both within and between groups was relatively small, and no noticeably large drops or increases in value occurred. "Average" performance in terms of the Standardized Achievement Average would have been 100 with a standard deviation of 20. Thus, all four groups tended to perform some one-third to one-half a standard deviation below the "average" West Virginia University freshman.

GPA performance, as viewed comparatively, also was substandard. Only the Guided Studies reduced load (Group I) achieved a mean GPA above 2.0 in any given semester, and in the case of that group, only in the first semester.

Withdrawal or attrition rate was the second measure used to test the effect of the two experimental treatments used in this study. Table XI shows the attrition rate for the entire sample, group by group and semester by semester, in terms of both frequency and percentage. Withdrawal comparisons tend to parallel achievement results reported prior. The two groups receiving the Guided Studies course tended to have the lowest withdrawal rates in the initial stages while the heaviest withdrawal was experienced in the early periods in the reduced load group. Both of the groups enrolled in Guided Studies (I and II) as well as the control group (IV) suffered more withdrawals during the second year than during the first year, while the reduced load only group (Group III) suffered more withdrawals during the first year. The fourth semester produced a sharp increase in the number of withdrawals found in Group II which received the guided studies class only. By the end of the two year period only Group I, the guided studies reduced load group had a significantly lower proportion of withdrawals.

Attrition rate was statistically analyzed by means of chi square, computed for the end of the freshman and the end of the sophomore years and for total withdrawals over four complete semesters and the beginning of the fifth. Thus, three separate 2 X 4 chi square tests were computed with the four experimental

Table XI

Attrition Rate of Sample

Group		First		Second		Third		Fourth		Fifth		Total	
#	N	N	%	N	%	N	%	N	%	N	%	N	%
I	78	0	00	8	10	4	05	9	12	4	05	25	32
II	64	0	00	5	08	9	14	12	19	6	09	32	50
III	89	7	08	15	17	15	17	3	03	6	07	46	52
IV	99	2	02	14	14	15	15	5	05	13	13	49	49
Total		9		42		43		29		29		152	
Percent of total attrition			06		27		28		19		19		100
Attrition as % of total sample			02		12		13		09		09		46

groups delineating one axis, and withdrawn or not withdrawn, the other axis. The resulting values were: freshman year $X^2 = 10.47$, df=3, $P<.02$; sophomore year $X^2 = 8.65$, df=3, $P<.05$; total $X^2 = 7.86$, df=3, $P<.05$. The greatest difference in withdrawal occurred during the freshman year when the two groups with the lowest proportion of withdrawals were enrolled in Guided Studies.

It should be noted that many students did not formally withdraw but failed to return at the beginning of a new semester. When this occurred, the student was, for computational purposes, considered to have withdrawn during the semester for which he failed to return.

The two major treatments, Guided Studies and reduced load, were tested by means of chi square. Withdrawal proportions for class vs. no class and for reduced load vs. no reduced were compared. For the reduced load treatment, the $X^2 = 4.10$, df=1, $P<.05$. For the reduced load treatment, $X^2 = 1.72$, df=1, $P<.05$. For the reduced load treatment, $X^2 = 1.72$, df=1, $P<.20$, not significant.

Discussion

The first hypothesis suggested that assignment to the experimental Guided Studies class designed to improve reading ability and study habits also should improve the academic achievement of failure prone freshmen. This hypothesis is conditionally supported by the results of this study. Students enrolled in the Guided Studies course obtained significantly higher grade point averages than those not enrolled. However, this advantage tended to decrease over time. During the second semester of the freshman year, approximately one half of the Guided Studies students continued in the Guided Studies course class. During the sophomore year, however, when the Guided Studies course no longer existed, the achievement of the control group compared favorably with achievement of the two Guided Studies experimental groups. Thus, while the students were enrolled in the experimental class, their achievement was apparently improved, but after the class terminated, their achievement tended to be no better than that of the control group. Perhaps more important than the Guided Studies course itself was the apparent interaction between Guided Studies and the reduced load treatments.

The effectiveness of the Standardized Achievement Average (SAA) as an appropriate achievement criterion is suggested by the results of the study. Use of the normal GPA, confounded by the grades received in the Guided Studies course itself and by possible bias resulting from enforced shifts in students schedules might have caused apparent differences in student achievement actually unrelated to the two treatments under examination. If only GPA had been used the results would have suggested clear out effectiveness for the Guided Studies treatment during the first year.

Measuring student achievement on a comparative basis within the framework of the courses actually taken would appear to give a more accurate estimate of the actual effectiveness of the two treatments. It should be noted that SAA yielded

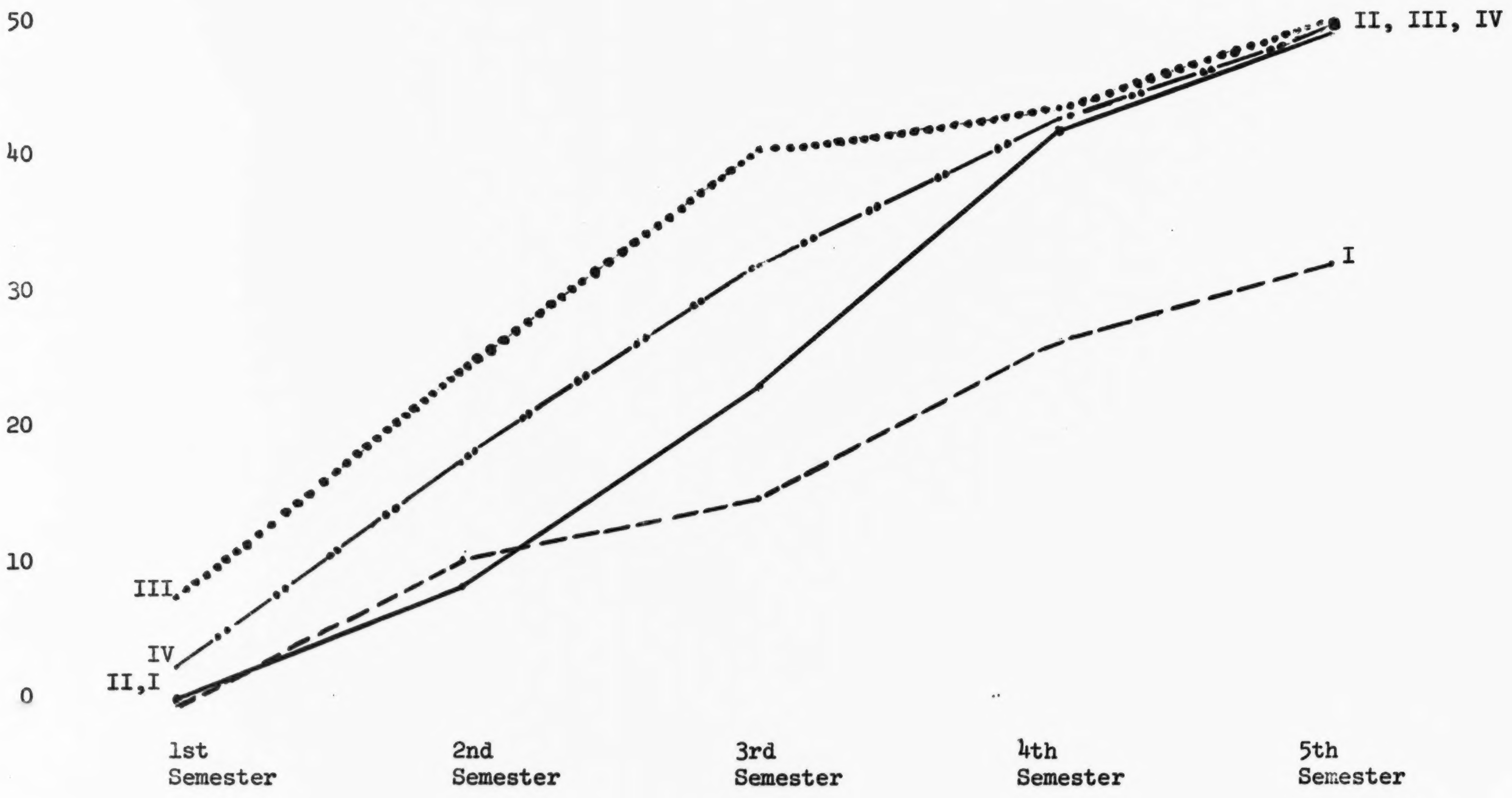

Figure 1. Cumulative Withdrawal Rate of Experimental and Control Groups First Semester of the Freshman Year Through the First Semester of the Junior Year

a significant difference only in the first semester. At the same time, the same general trends of the analysis are evident in both the SAA and the GPA.

The apparent effectiveness of the Guided Studies class may have been related to possible psychological or emotional support received by students enabling higher achievement as long as the support was available. It is also possible that relevant academic skills were learned and applied during the freshman year, but once out of the special course, old habits were reestablished.

A second aim of the study was to see if enrollment in the reading improvement-study skills class would reduce the proportion of withdrawals of failure prone freshmen. This hypothesis is partially supported. Withdrawal rate was significantly higher for those students not enrolled in the class than for those enrolled. The difference was greatest during the freshman year but persisted throughout the follow-up period.

It should be noted, however, that this difference can be attributed only to one of the two groups enrolled in the guided studies class, Group I, which received both the special class and the reduced load. Of the four groups, it clearly enjoyed the lowest withdrawal rate. This finding represents the only clear cut demonstration of success since the ultimate achievement of the other two experimental groups was no better than that of the control group. Apparently, in combination, the two treatments prepared a larger percentage of students to handle college work successfully than could have been expected normally.

The third hypothesis suggested that reduction of credit load carried by failure prone freshmen would improve their academic achievement. This hypothesis was not generally supported. Group III, which received only the reduced load treatment, obtained achievement scores well and consistently below the scores of all other groups including the control group. Interesting, however, the group receiving both the reduced load and the special class treatments achieved at a much higher level. The interaction effect significant for GPA at all criterion points, suggested that the group receiving both treatments achieved better and more consistently. The group with the reduced load only was consistently poor in achievement.

The reduced load is frequently applied to persons with low achievement scores, students on academic probation, for example. The results of this study suggest that this practice may be more harmful than helpful since the students receiving that treatment in this study obtained the lowest achievement scores of any group. Reducing the academic load for low achievers may only lower achievement further. Combination of a load reduction with specific remedial measures is apparently much more effective. This finding is also supported by previously quoted literature (Hayes, 1962).

A possible explanation for this phenomenon is that reducing a student's credit load below a given level may result in a lack of involvement in the work to be done and in less external pressure and less pressing internal motivation to succeed at the limited work available. Thus, the student does not "apply himself" and his achievement falls even lower. Since the group receiving both treatments in this study was fairly successful in spite of the load reduction, perhaps the informal, individual nature of the Guided Studies course provided the needed sense of involvement and/or suggested a course of action through which deficiencies could be remedied. Through such aid at least some students became well enough adapted to the University environment to handle the normal academic demands.

The fourth hypothesis stated that reduction in the credit load carried by failure prone freshmen would result in a reduction in withdrawal rate. This hypothesis was clearly not supported. The chi square test used did not indicate a significant difference in withdrawal rate between students receiving the reduced load treatment and students not receiving the treatment. In fact, withdrawal from college appeared to be accelerated by the load reduction. The interaction between the Guided Studies course and the reduced load, however, seemed to be most effective in reducing withdrawals over the longer term.

In addition to considering the hypotheses, it is possible at this point to draw some conclusion about the achievement criteria used in this study. As noted earlier, the Standardized Achievement Average was used in an attempt to avoid the obvious possible bias in the grade point average. Grades were transformed into standard scores. Although SAA and GPA correlated .86 with each other, SAA proved to be a more conservative and perhaps more accurate estimate of the changes which were involved here. SAA tended to reinforce the GPA analysis of variance findings for the first semester, but thereafter SAA showed no difference while GPA suggested significant differences.

ANALYSIS OF SECONDARY VARIABLES

Problem

As indicated in the literature, certain variables are prominent in being probably related to academic achievement of freshmen who have been enrolled in courses like Guided Studies. One variable is the development of reading and study skills taught in the courses; it is the goal of persons administering and teaching reading-study skills courses that skills will be developed or learned which will make the student more proficient in his studies.

The literature also indicates that attitudes, in a broad sense, may be related to achievement. Attitudes toward study in general and the Guided Studies course itself and attitude toward the Guided Studies teacher may be important. Also of concern is the student's attitudinal readiness for college, i. e., whether his social background resembles that of the normal college-bound population. There is also the possibility that a Hawthorne effect is operant in this situation; this may also be considered an attitudinal variable.

The underlying assumption of reading-study skills courses is that failure-prone freshmen are deficient in verbal skills; if such is the case, non-verbal intelligence would be a better measure of ability for such students than verbal intelligence test scores.

The above considerations have led to the formulation of the following research hypotheses:

1. Favorable attitudes toward study, toward a Guided Studies course, and toward teachers of the course are related to Standardized Achievement Average and to Grade Point Average of marginal freshmen.
2. Social background involving expectancy of college attendance is related to Standardized Achievement Average and to Grade Point Average.
3. Non-verbal intelligence is related to Standardized Achievement Average and to Grade Point Average.

Procedures

I. Sample:

The sample for this section of the study included only the 142 subjects who were actually enrolled in the Guided Studies course since these are the only students upon whom the measures used were available.

II. Methods of Analysis:

a) Achievement Criteria

The first criterion of achievement was the attained or actual grade point average (GPA) which reflects the student's official standing at the University, and, as such, it is used by the institution to determine whether a student should be allowed to continue in the program. Thus, the GPA is an important "real-life" criterion as well as a statistical criterion.

The second achievement criterion was the Standardized Achievement Average (SAA) which has been previously described.

b) Instruments

Three non-standardized questionnaires were used or developed in order to measure attitudes and social background. A Thurstone scale for measuring attitude toward a particular course was developed at Michigan State University (Lehmann, 1961). Judges (300) sorted statements and scale values were given the items finally used by standard Thurstone scaling technique (Edwards, 1957). We shall refer to this scale as the Lehmann Scale for the sake of clarity. The scale had never been standardized nor used; it was necessary, therefore, to perform an item analysis and to calculate the reliability of the instrument. Of twenty-one original items, twelve survived the item analysis as capable of discriminating between favorable and unfavorable attitudes toward the course. A split-half reliability coefficient, corrected for length using the Spearman-Brown formula, was calculated on the refined scale and resulted in the value $r_{tt}= .69$. A similar coefficient including all twenty-one original items resulted in the value $r_{tt} = .89$. The refined scale is used for all further analysis. The Lehmann Scale was administered to all Guided Studies sections during the testing period at the end of the semester.

In order to measure attitude toward the teacher of Guided Studies course, a questionnaire was developed from one which had been used previously in the Psychology Department at West Virginia University (Teacher Attitude Questionnaire). Of eight original items, four were selected by item analysis as comprising the most discriminating questions. Because of the small number of items, no reliability coefficient was computed. The Teacher Attitude Questionnaire was administered along with the Lehmann Scale.

In order to measure the so-called social background variable involving "college expectancy", questions were sifted from a questionnaire developed and administered by one of the Guided Studies instructors. Four items were used. Three items concerned the student's parents approval of his college attendance and one item estimated the number of extracurricular activities in which the student participated in high school. The former shall be referred to as the Keister Questionnaire, the latter as the Activities Count. While the items do not constitute a scale, the data do provide useful information in the direction of the second hypothesis. The questionnaire was administered at the time of the final examination of the Guided Studies course. Appendix B contains the four non-standardized scales and questions.

Non-verbal mental ability was measured by means of the Chicago Non-Verbal Test of Mental Abilities which was administered by the Guided Studies instructors at the beginning of the training period.

III. Tests of Hypotheses related to Secondary Variables:

The first hypothesis concerns the relationship between certain attitudes and achievement. The hypothesis was tested by product-moment correlation of SAA and GPA with scores on the SSHA (pre-, post-, and difference scores), Lehmann Scale, and Teacher Attitude Questionnaire. A crude test for the presence of a

Hawthorne effect was computed by comparing achievement of students with very favorable attitudes to achievement of students with very unfavorable attitudes. Chi square was used for this test.

The second hypothesis was tested by use of biserial correlations computed between the Keister Questionnaire and GPA and SAA to measure the relationship between social background and achievement. The biserial correlation was used because the scores tended to fall in very few of the possible categories. Biserial r's were also computed between the Keister Questionnaire and 1) the Lehmann Scale, 2) the Teacher Attitude Questionnaire, and 3) the SSHA post-test. The Activities Count was correlated with GPA and SAA by means of the product-moment formula.

The third hypothesis was tested by product-moment correlation of scores on the Chicago Non-Verbal Test of Mental Abilities with SAA and GPA. The product-moment correlations were cross-computed to provide a matrix of intercorrelations between all variables.

Results

I. Tests of Hypotheses:

Hypothesis one questions the relationship between certain attitudes and the achievement criteria. Neither SAA nor GPA correlated significantly with the Lehmann Scale, the Teacher Attitude Questionnaire, or the first administration of the SSHA. Both SAA and GPA, however, correlated significantly with the second administration and change scores of the SSHA (all probabilities $<.01$) as might have been expected. Table XII represents these correlations.

Table XII

Coefficients of Correlation Between Attitude Questionnaires and Achievement Criteria

Questionnaire	SAA	GPA	N
Lehmann Scale	.06	.06	136
Teacher Attitude Questionnaire	.05	.08	133
Survey of Study Habits and Attitudes			
first administration	.12	.12	141
second administration	.36*	.37*	141
change	.27*	.31*	141

*$P < .01$
(N is not constant due to missing data for some subjects.)

A crude test for the presence of a Hawthorne effect was computed using a 2 X 2 chi square situation. SAA was divided into groups above and below the mean (93), and GPA was divided into groups above and below 2.00. For each questionnaire, the most favorable 27 per cent and the most unfavorable 27 per cent were used as criterion groups and divided into the SAA and GPA groups described above. Computations were performed separately for the two achievement criteria. The Lehmann Scale and Teacher Attitude Questionnaire did not produce significant values in these computations; second administration and change SSHA scores were significant (all probabilities $< .01$). These results do not deviate from correlational results for the same variables although only persons with extremely favorable or unfavorable attitudes were considered in the chi square computations while the correlations included all subjects. Table XIII contains the relevant chi square values.

Table XIII

Chi Square Test for the Presence of the Hawthorne Effect

Questionnaire	SAA	GPA	N
Lehmann Scale	1.98	1.95	74
Teacher Attitude Questionnaire	2.06	2.77	72
Survey of Study Habits and Attitudes			
second administration	13.62*	10.43*	76
change	17.24	7.6*	76

*$P < .01$

Since attitudes of students might differ due to the load treatment, t-tests were computed for each attitude questionnaire to determine whether there were significant differences in attitude between the group with a load limit and the group with none. The t values were as follows: SSHA post-test score, t = .704, df=139 (not significant); SSHA change score, t=.177, df=139 (not significant); Lehmann Scale, t=2.039, df=134 (P .05, the group with no load limit having the higher score); Teacher Attitude Questionnaire, t=1.33, df=133 (not significant).

The second hypothesis is concerned with social background involving college expectancy and its relation to achievement. The biserial correlation coefficients computed between the Keister Questionnaire and the achievement criteria produced no significant correlations. SAA correlated only -.01 with the Keister Questionnaire, and for GPA, .00. Nor did the Activities Count produce significant product-moment correlations with SAA (r=-.05)or GPA (r=-.04).

The final hypothesis examines the relationship between achievement and non-verbal intelligence. Product-moment correlations between the Chicago Non-Verbal Test of Mental Abilities with SAA and GPA were -.04 and -.06 (not significant), respectively.

II. Additional Analyses:

The total product-moment matrix for all variables was examined in order to determine whether there might be important relationships not suggested specifically by the hypotheses. One finding from the matrix is that while non-verbal intelligence is not related to achievement, it is somewhat related (negatively) to the Activities Count ($r=-.16$, $P=<05$).

The Lehmann Scale correlated .53 ($P<.01$) with the Teacher Attitude Questionnaire, indicating a relationship between attitude toward the Guided Studies course and attitude toward the Guided Studies teacher.

Scores on the SSHA were found to be significantly inter-related; pertinent coefficients are reported in Table XIV.

Table XIV

Significant Inter-Correlation Coefficients Between Administrations of the Survey of Study Habits and Attitudes (SSHA)

SSHA Administration	SSHA Administration		
	first	second	change
first		.64*	-.21*
second	.64*		.48*
change	-.21*	.48*	

*P .01

In addition to being used as a test of the third hypothesis, the Keister Questionnaire was correlated biserially with the Lehmann Scale, the Teacher Attitude Questionnaire, and the post-test SSHA in order to determine whether attitudes measured by these questionnaires might be related to the social background factor. The coefficients were .01, .10, and .02, respectively; none were significant.

Discussion

In a descriptive study such as this, concern was not centered about an attempt to formulate laws of behavior, but about describing relationships uncovered and specifying the conditions under which the relationships might be expected to recur. Relationships uncovered should suggest variables which might be manipulated in order to test their actual effect on the desired outcome of reading-study skills courses.

The hypotheses are designed to test variables suggested by the literature as being important.

Of the three attitude measures used to test the first hypothesis, only one supported the hypothesis. Favorable attitude toward the class (Lehmann Scale) and favorable attitude toward the teacher (Teacher Attitude Questionnaire) were related to neither of the achievement criteria. Favorable attitude toward study, as well as "good" study habits (SSHA), was, however, related to achievement and, apparently, related in terms of development of attitudes during the course of training. Pre-test SSHA scores were not related to achievement, but post-test and change scores were related at the .01 level. From this we may conclude that, regardless of their initial attitude toward study, students who developed more favorable attitudes during the training obtained higher achievement scores, and students whose attitudes changed most in a positive direction obtained the highest achievement scores. These results are encouraging in that they indicate a possible point of emphasis in the training of failure-prone freshmen.

Items on the SSHA are extremely transparent; it is easy to determine the "correct", or socially acceptable, answer. However, even if students responded in terms of the "correct" answer rather than an answer which is representative of their own habits and attitudes, the results indicate that knowledge of the "correct" answer was related to achievement and should be emphasized in training.

There are two alternative explanations for the failure of the Lehmann Scale and the Teacher Attitude Questionnaire to show significant correlation with achievement. One alternative is that the attitudes measured by these questionnaires are, in fact, not related to achievement. The other alternative, which is particularly pertinent, is that the questionnaires are faulty; neither has been standardized, and the assumption of face validity may not be justified. Certainly we cannot conclude that attitude toward the course and the teacher are not related to achievement until trustworthy instruments are available and utilized to measure these attitudes.

It has been suggested that all improvement effects discovered in studies of reading-study skills courses are due to a Hawthorne effect rather than to any treatment of the subjects. Unfortunately, it is difficult to isolate Hawthorne effects in such studies and no reports in the literature have done so. In this study an attempt was made to isolate the effect by examining attitudes of the most favorable and most unfavorable subjects. If a Hawthorne effect is operant, students with the most favorable attitudes should have low achievement scores. Again the Lehmann Scale and the Teacher Attitude Questionnaire delineated no significant differences, but post-test and change SSHA scores indicated significant differences for both SAA and GPA. However, a test of general attitudes toward study is not adequate for testing for the presence of a Hawthorne effect in a particular course. Such a determination would necessitate the use of an experimental group which was led to believe they were receiving special treatment when actually they were not.

This study presented the opportunity for determining whether the two groups receiving the class treatment differed in attitude as a function of differential load treatment. The only significant attitude difference between the two groups occurred on the Lehmann Scale. The group which was not restricted in credit load was more favorable toward the class. Perhaps the three credit hours involved did not prevent these students from taking other required or desired courses to the extent that it prevented the restricted load group from doing so.

Neither the Keister Questionnaire nor the Activities Count correlations with achievement supported the second hypothesis. It is possible that social background involving college expectancy was not related to achievement for these marginal students. It seems more likely, however, that the means used to measure social background and college expectancy simply were not adequate. The instruments were not designed for this purpose. Also, in all cases, basis of sample selection restricted achievement variance which, in turn, reduced correlations and other relationships.

The Chicago Non-Verbal Test of Mental Abilities did not correlate significantly with achievement for several possible reasons as stated above; therefore, the third hypothesis was not supported. This finding should be considered, however, by persons who administer reading-study skills courses. The assumption behind such courses is that the students possess the necessary intelligence, or non-verbal mental abilities, to graduate if their verbal deficiency is alleviated. The lack of correlation between the intelligence test and achievement criteria seems to suggest a lack of relationship in this context. Restricted predictor and criterion variance may have influenced the finding, however, to a degree not determined in this study.

The correlations computed, but not specified in terms of hypotheses, also provided information. Non-verbal intelligence was negatively related to the Activities Count. More intelligent students reported fewer high school activities than did less intelligent students. This finding, while intrinsically interesting, contributes little to determination of possible correlates of achievement of Guided Studies students. The same is true of the correlation between the Teacher Attitude Questionnaire and the Lehmann Scale. One would expect a halo effect to be present in almost any course; students who are favorable toward the course are also favorable toward the teacher.

Conclusions from Examination of Secondary Variables:

1. Study habits and attitudes measured by the SSHA are related to achievement, and the Guided Studies course did provide training which allowed students to increase

their SSHA scores and, correspondingly, their levels of achievement.

2. Attitudes toward the course and teacher and the social background involving college expectancy were not shown in this study to be related to achievement. These variables should be studied with more accurate instruments for measurement.

3. Non-verbal intelligence was found unrelated to academic achievement of failure-prone freshmen.

ANALYSIS OF REMEDIAL ENGLISH SAMPLE

Problem

As has been indicated previously, failure-prone freshmen required by University regulation to enroll in the remedial English course were excluded from the main study in order to reduce confounding effects of the Guided Studies course and the Remedial English course. However, a certain number of these students were enrolled in Guided Studies. The enrolled students were randomly selected, as was a comparable control group whose members were not enrolled in Guided Studies. The purpose of this section is to analyze the differences in achievement and attrition between failure-prone freshmen enrolled in both remedial English and Guided Studies and those enrolled only in remedial English but not enrolled in Guided Studies.

Objectives and Hypotheses

The objective of the analyses reported herein is to evaluate the effectiveness of a selected treatment in the improvement of academic achievement and reduction of withdrawal rate among entering freshmen students whose predicted academic achievement is marginal (predicted grade point average of 1.99 or below on a 4.0 scale). Since credit hour requirements were the same for all remedial English students, only hypotheses (1) and (2) from the original study are applicable. These hypotheses may be stated as follows:

(1) The assignment of failure-prone first term freshmen who are enrolled in remedial English to a special class designed to improve reading and study skills and to ease the transition to the University environment will result in significant improvement in academic achievement.

(2) The assignment of failure-prone first term freshmen who are enrolled in remedial English to a special class designed to improve reading and study skills and to ease the transition to the University environment

will result in a significant reduction in withdrawal rate.

Procedures

I. The Sample

The sample was selected from the 1964-65 entering freshman class of West Virginia University. The population consisted of such students who met the following criteria:

(1) on the basis of high school grades and ACT scores, had a predicted freshman grade point average of 1.99 or below;

(2) by reason of high school achievement in English and performance on the ACT English subtest, were required to take the remedial English course;

(3) were enrolled for at least 10 or more credits.

Thus, the sample resembled that of the prior reported analysis except that these students were required to take the remedial English course.

The sample consisted of 71 freshmen, of whom 65 (91 per cent) were males and 6 (9 per cent) were females. The mean predicted grade point average for these students was 1.74. Majors of the students are indicated in Table **XV**; the largest major group was General Studies (no major field preference selected), with Arts and Sciences and Commerce students second. Source states of the students are represented in Table **XVI**; most of the students were from West Virginia and almost all were from the Appalachian region.

Initial scores on the reading, intelligence, and American College Test scores are not reported since scores for these students fell within the limits reported for the groups not enrolled in remedial English (see Tables III and IV in the first section of the report).

II. Experimental Design

The experimental design was simply a two group experiment in which one group received the experimental treatment while the other did not. The groups were treated in the same manner in all other respects.

III. Assignment of Sample to Experimental Groups

Students in the sample were assigned to experimental or control groups on a random basis utilizing a special computer routine. Total sample size was 71 with Group 11 N=29 (Guided Studies) and Group 10 N=42 (no Guided Studies).

IV. Treatment

The only treatment involved here is the experimental Guided Studies class which has been described previously and in Appendix A.

Table XV

Major Areas of Study of Remedial English Sample

Major	Group 11		Group 10		Total	
	N	%	N	%	N	%
General Studies	13	45	4	10	17	24
Arts and Sciences	2	07	9	21	11	16
Commerce	4	14	7	17	11	16
Physical Education	5	17	5	12	10	14
Engineering	2	07	5	12	7	10
Forestry	1	03	5	12	6	08
Education	1	03	4	10	5	07
Agriculture	0	00	2	05	2	03
Mathematics	1	03	1	02	2	03
Total	29	99*	42	101*	71	101*

*Total percentages do not equal 100% due to rounding error.

Table XVI

Source States of Remedial English Sample

	Group					
	11		10		Total	
	N	%	N	%	N	%
West Virginia	23	79	31	74	54	76
Pennsylvania	1	03	5	12	6	08
New Jersey	1	03	2	05	3	04
New York	0	00	2	05	2	03
Delaware	1	03	0	00	1	01
District of Columbia	0	00	1	02	1	01
Indiana	1	03	0	00	1	01
Maryland	1	03	0	00	1	01
Ohio	1	03	0	00	1	01
Virginia	1	03	0	00	1	01
Total	29	97*	42	100	71	97*

*Total percentages do not equal 100% due to rounding error.

V. Achievement Criteria

Two achievement criteria were used for analysis: 1) the Standardized Achievement Average (SAA) as described previously and 2) the actual grade point average (GPA). Criteria points were the same as those established for the groups not enrolled in remedial English.

Standard descriptive techniques were used to describe the collected data. The first hypothesis was tested by means of Student's t and the second hypothesis was tested by chi square.

Results

Results of the t test analysis of the first hypothesis are presented in Table XVII which shows small and insignificant differences for the freshman year. For the sophomore year, significant differences were found in the first semester GPA and in the year end cumulative GPA and SAA.

The second hypothesis was analyzed in terms of a 2x2 chi square testing proportions of withdraws in the two groups. The test was made only on the total withdrawals by the beginning of the fifth semester since previous criterion points yielded expected frequencies too small for meaningful analysis. The resulting value, $X^2 = 3.56$, df=1 was significant only at the .10 level rather than at the .05 level and therefore not acceptable for significance. Actual observed frequencies are presented in Table XVIII.

Discussion

The question of this portion of the study was directed at the possible effectiveness of the Guided Studies course in improving achievement of failure prone freshmen also enrolled in a remedial English course. The t values in Table XVII of the results represent the comparison of a group of remedial English students enrolled in Guided Studies with a group similar in all respects excluding enrollment in Guided Studies. Since no significant differences were found in either of the two achievement criteria during the freshman year, Guided Studies neither aided nor hindered the achievement of the remedial English students during the freshman year. During the sophomore year, however, significant differences occurred in GPA for the first semester and in both SAA and GPA for the cumulative semester. In both cases the control group had the higher mean achievement record suggesting that Guided Studies may have hindered achievement of students enrolled at the same time in remedial English.

It is impossible to determine on the basis of the data collected just why this occurred; two alternative explanations, however, are suggested by the experimental situation itself. It should be noted that remedial English and Guided Studies were each 3 credit hour courses and, thus, together occupied one-half to one-third of the allowed number of credit hours. Therefore, students enrolled in both of these courses might have viewed themselves as "behind" their six hours in their program as compared with their freshman classmates.

Thus such students may have attempted overly heavy loads during subsequent terms and therefore reduced chances for success.

An alternate explanation is that assignment to either of these courses is an indication to the student that he is deficient in some respect or that he may not have certain qualities which the University considers essential to graduation. In light of these impressions, the student may 1) view his six hour deficit as impossible or impractical of eradication or 2) view himself as being incapable, at least in the eyes of the university, of overcoming his academic deficiencies. In either case, the student might not be motivated to do his best work.

Analysis indicated that the special "Guided Studies" course made no significant difference in attrition rate. Attrition in both experimental and control groups was unually high: examination of the frequency data in Table XVIII indicates that 72 per cent attrition in the experimental group as compared to 50 per cent attrition in the control group. In both groups the attrition exceeds the attrition rates typically reported in the literature. These results also give further support to the possible negative changes in academic self concept resulting from assignment to remedial courses.

In conclusion, while there were no significant differences in achievement of remedial English experimental and control groups during the freshman year, but what might be described as a negative difference was found during the sophomore year. No significant difference in attrition rate was found. Accordingly, the results would appear to bring into question the practice of assigning marginal freshmen students to more than one general remedial course at a time.

Table XVII

Analysis of Achievement Criteria for Remedial English Groups

Grading period	Criterion	t value	df	Significance
1st semester freshman year	SAA	.76	67	n.s.
	GPA	.79	67	n.s.
cumulative freshman year	SAA	.22	68	n.s.
	GPA	.57	68	n.s.
cumulative sophomore year	SAA	2.81	47	$P < .01$*
	GPA	2.76	47	$P < .01$*

*The group not having the Guided Studies had the higher Mean.

Table XVIII

Attrition Rate of Remedial English Sample

Group		Semester											
		First		Second		Third		Fourth		Fifth		Total	
#	N	N	%	N	%	N	%	N	%	N	%	N	%
11	29	0	00	2	07	8	28	7	24	4	14	21	72
10	42	0	00	9	21	5	12	4	09	3	07	21	50
Total		0		11		13		11		7		42	
Percent of total attrition			00		26		31		26		19		100
Attrition as percent of total sample			00		15		18		15		09		59

CONCLUSIONS

1. When failure prone first term freshmen are assigned to a special class designed to improve reading and study skills and to ease the transition to the University environment and are assigned a reduction in the credit load carried, these students will enjoy improved academic achievement while they are enrolled in the course and a reduced withdrawal rate over a longer term. After the termination of the class, the achievement of the students will be comparable to that of students receiving neither treatment; therefore, the main benefit to be gained from the implementation of these treatments is the reduced withdrawal rate.

2. Failure prone freshmen receiving the special reading improvement-study skills course but no reduction in credit load may be expected to show improved academic achievement while the class is available, but achievement will drop to a lower level when the class is terminated. Given alone, such a treatment apparently is not effective in reducing withdrawals.

3. Failure prone freshmen who are assigned a reduced credit load but are not given a special class were shown in this study to produce achievement significantly below that of students receiving neither treatment (control group).

4. Withdrawal rates by the opening of the junior year tended to be essentially the same for those students who received the course treatment only, the load reduction only, or neither treatment. Significant reduction in withdrawals came only with the combination of the two treatments.

Implications:

For those concerned with reduction of withdrawal rates, the implication of this study is clear. Reducing the credit load of failure prone freshmen is more likely to be pernicious than beneficial. There seems, indeed, to be a further implication that below normal credit load limits may not be beneficial to low achievers. Perhaps other methods for encouraging improvement in achievement should be used.

Application of the treatments herein described to students similar to the present population should result in decreased withdrawal rates. However, whether the reduction is of a magnitude considered sufficient to justify the institutional effort and expense is, in the end, a societal judgment. Unfortunately, the gains shown here were not so over powering as to make such judgments easy.

Although as long as any failing grades some students will always receive a predicted marginal achievement, one might conclude from these findings that steps should have been taken to discourage the admission or encourage the early withdrawal of some of these students. This again, however, is a societal judgment based on factors which extend beyond this study.

SUMMARY

No attempt will be made here to summarize the entire rationale, design, and findings of the three related studies reported herein. Each was directed at one aspect of a larger problem, that of greater conservation and development of Appalachia's and America's human resources. The work demonstrates a short term relationship between collegiate achievement and a reading improvement-study skills course, a possible negative achievement influence of the common practice of assignment of a reduced academic load, and an interesting and apparently effective interaction between the two treatments.

Relationships of the "Guided Studies" treatment to certain secondary affective variables were examined showing improved study habits as a result of the special course and exploration of relationships among the affective variables.

In the third phase of the study, the effects of a reading-study skills course on academic achievement of marginal students also assigned to a remedial English course were tested resulting in apparently negative findings.

The broader implications of the study may be as important as the specific and immediate findings. American education, at all levels, needs more experimentation designed to test the "conventional wisdom" of the profession. By way of contrast, we have substantial descriptive work, some normative evaluation, but few experimental studies on which teachers, administrators, board members, legislators and others can make knowledgable choices with some understanding of the consequences.

More such experimental study is needed at all educational levels asking not only "which group came out best" but, more importantly, "how large were the gains" and are these gains greater or lesser than gains which might have been made if alternate choices had been selected. For example, if one has reason to believe that 15 to 20 percent of the entering marginal freshman of an institution might be retained and through some such treatments (which this study alone may not necessarily establish) graduated from college, should an institution take the steps and allocate

the resources necessary to effect such a reduction? If not, why not? If so, why not some alternate choice?

Unfortunately, we do not have the data to support such choice making in most of the day to day decisions which must be made. Increased investment in education and the public confidence to sustain it will demand movement in the direction of filling the gap.

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APPENDIX A

CONTENT AND PROCEDURES FOR EXPERIMENTAL CLASS ESPECIALLY PREPARED FOR MARGINAL COLLEGE FRESHMEN

University students who have marginal chances for academic success are many times handicapped by inability to read and to use study skills effectively. This course is planned to provide a situation in which reading and study skills necessary for achievement in the content fields may be developed.

TEXTS: Baker, William D., Reading Skills, Prentice Hall, Inc., Englewood Cliffs, New Jersey.

Leedy, Paul D., Read with Speed and Precision, McGraw-Hill Book Company, New York.

College texts in the Subject Matter fields.

OBJECTIVES:

1. To provide practice in using the fundamental skills of reading through direct instruction in
    a. Using the basic skills of structural and phonetic analysis for rapid, independent word recognition.
    b. Using reading comprehension skills with all types of reading materials.
    c. Adjusting reading speed to the reader's purposes and to the nature of material to be read.
2. To provide instruction in the development and use of basic study skills through laboratory practice in
    a. Setting up purposes for reading
    b. Using study aids in reading
    c. Discerning and retaining essential facts in materials read
    d. Organizing and expressing ideas gained from materials read
    e. Learning how to concentrate on materials that have little interest or emotional appeal
3. To ease the transition from a (small, rural) high school environment to a University environment

PROCEDURES:

Classes will follow the schedule required for a regular three semester hour course. Each section will meet three one-hour periods per week. The first period each week will be devoted to a discussion of the pertinent sections of the basic text. The first thirty minutes of each of the following periods will be devoted to instruction in the basic study and reading skills enumerated under the section on objectives; the second thirty minutes will be used for laboratory experiences in which students will receive practice in using the skills stressed in the instructional period. Two additional thirty minute periods will be scheduled each week to provide for small, informal group discussions on adjustment problems and for use in individual advising-counseling assistance.

Emphasis will be placed upon reading from college textbooks, from commercially prepared materials, and from special exercises compiled by Reading Center personnel. Reading machines will be used to supplement printed materials for developing individual skills. A detailed description of each of these procedures follows:

Steps in Organizing the Class

Students will be placed in the experimental and control groups according to American College Test scores and high school grades. They will be assigned to class sections according to regular university enrollment procedures. Tests to be used in grouping experimental students are enumerated and explained below.

1. The Chicago Non-Verbal Mental Abilities Test will be administered to students in the experimental group. Scores will be used as a criterion for determining reading expectancy, and for determining the affect of the instructional program upon students of different levels of maturity.

2. The Diagnostic Reading Tests, Survey Section, Form A, The Diagnostic Testing Committee, Wolf Head, North Carolina, will be administered to all students in the experimental group. Results from this test will be used to assess general

reading ability and to discover areas in which further testing is required to determine specific reading deficiencies.

3. The California Reading Test, Advanced, Grades 9-14, will be administered to measure achievement in vocabulary and comprehension in the content fields. Data from these tests will be used for individual counseling.

4. The Brown-Holtzman Survey of Study Habits and Attitudes, Psychological Corporation, will be administered to determine study practices and attitudes toward study. Data on study practices will be used to plan instruction in the use of study skills; data on attitudes toward study will be used to counsel students during the weekly counseling periods.

5. Data from mental, achievement, diagnostic, and study skills tests will be used to plan programs for the different instructional sections. As nearly as possible, students will be grouped within sections according to specific reading needs, general reading level, and reading speed.

Students in each section will be provided with (1) a course syllabus containing the purposes of the course and suggestions for preparing for class participation and for evaluating progress, (2) a textbook, Leedy, Paul D., Read with Speed and Precision, McGraw-Hill Book Company, New York, and (3) an exercise book, Baker, William D., Reading Skills, Prentice Hall, Inc., Englewood Cliffs, New Jersey.

The Instructional Program

General instructional procedures will be planned in advance; special techniques will be determined from the needs of individual groups. Classes will be conducted according to the following schedule:

Days	Instruction	Laboratory	Counseling
Monday	1 hour	—	—
Tuesday	—	—	30 minutes a.m. 30 minutes p.m.
Wednesday	30 minutes	30 minutes	—
Thursday	—	—	30 minutes a.m. 30 minutes p.m.
Friday	30 minutes	30 minutes	—

A total of two hours per week will be spent in instruction and one hour in laboratory. Two hours each week will be devoted to counseling sessions to which small groups and individuals who have personal problems may come for assistance.

The instructional period. Through discussion and demonstration, the instructional period will be used to acquaint students with basic reading and study skills and how they are developed. Each instructional period will contain the following:

1. An explanation and chalkboard demonstration of the use of structural and phonetic analysis in attacking new words independently. Students will be taught how to use the most functional phonetic generalizations and how to divide words into their structural parts. Approximately ten minutes of each period will be devoted to this activity.

2. Intensive instruction in the use of comprehension and study skills. This part of the class period will be devoted to an explanation of the many comprehension skills that are required for effective reading at the college level and pertinent study skills will be suggested and their values and uses demonstrated. The entire first period of each week and approximately twenty minutes of each of the two additional periods will be devoted to this activity. General topics covered will include:

a. Checking reading ability
b. Reading for specific details
c. Reading for general information
d. Reading to anticipate outcomes
e. Critical reading
f. Reading to solve problems
g. Using different speeds in reading
h. Setting up purposes for reading
i. Learning to concentrate
j. Finding and organizing information
k. Using study helps in books

Classroom instruction will be supplemented by the use of the text, Read with Speed and Precision. Students will be required to read sections in the text, complete the accompanying exercises, and read collateral material pertaining to the above topics. Class exercises will be used to acquaint students with the techniques desirable to use in preparing for and taking both essay and objective tests.

The laboratory period. The purpose of the laboratory period will be to give students practice in putting basic reading and study skills to use in practical reading situations. This will be a work period under the direct supervision of the instructor. The following activities will be included in the laboratory period:

1. Reading selections from the exercise manual, READING SKILLS. Reading rate and comprehension will be checked at the end of each exercise and suggestions made for increasing reading effectiveness on similar material in future reading assignments.

2. Completing special reading exercises for building specific skills. Exercises for developing ability in skimming, reading for specific details, critical reading, and other similar skills will be prepared by the instructors to meet the needs of the different sections. Exercises will be administered and checked in class with explanations given for improving efficiency in that particular skill.

3. Using reading machines to develop special skills and to increase reading reading speed. Though the major part of instruction will be devoted to reading from books and other printed materials, one laboratory period each week will be devoted to the use of the Controlled Reader for the purpose of developing reading speed. Instruction will begin with materials written at the high school level projected at the maximum rate of speed at which the group can attain 70 per cent comprehension. Speed will be gradually increased until the reading rate is approximately 280 words per minute. At this point, college materials will be introduced at a speed of 250 words per minute. Speed will be increased gradually until the end of the semester. No attempt will be made to predetermine the ultimate speed the students should attain.

Students who are well above or far below the group mean in reading speed and comprehension will be assigned to work individually with the Craig Reader. An instructor will supervise the activity and will aid in keeping a record of progress.

Although the exact time alloted for each of the above activities could not be made in advance, approximately twenty minutes each period will be spend in actual reading instruction. Students will be urged to put the skills they learn in the instructional and laboratory periods into use in all outside reading assignments.

The counseling period. Two thirty minute periods will be scheduled two days each week for small group meetings in which students will be given personal or small-group counseling in the problem areas. Special effort will be made to help them adjust to university life and to understand the nature of the problems they will face in an academic program. Reading instructors will serve as coordinators of the counseling program. Students with special problems will be referred to other members of the University faculty who will serve as consultants in specialized areas. Every effort will be made to help students:

1. Adjust to the social and academic life of the University
2. Understand their own strong and weak points in relation to University life
3. Develop a sense of self identity and ability to fit into various roles group membership requires
4. Learn the available source to which they may turn for advising-counseling assistance.

Evaluation

Evaluation of the effectiveness of the program will be shared by students and instructors. Letter grades will be assigned for individual achievement. A close check will be kept on the reading improvement and general achievement of each student. The following measures will be used to assess the results:

1. A second form of the California Reading Test and the Diagnostic Reading Test, Survey Section, will be administered at the end of the semester to ascertain the standing of each student in vocabulary, comprehension, and general reading ability.

2. A second form of the Brown-Holtzman Survey of Study Habits and Attitudes will be administered to measure improvement in the understanding of study skills.

3. Academic grades of the experimental group will be compared with those of the control group. Final semester grades will be compared with mid-semester ratings to determine if significant changes have been made.

4. Students will keep a progress folder in which daily entries are made showing the current standing in reading speed and comprehension.

5. The test data will be studied to find the areas in which instruction seemed to be most effective and the areas in which there was little measurable improvement.

Appendix B

Non-Standardized Scales and Questionnaires

I. Lehmann Scale

General Instructions:

As you know, the Guided Studies course is being given on a trial basis and we are evaluating the course. As part of this evaluation, we would like to get your opinions and attitudes concerning Guided Studies. For experimental purposes only, we would like your name and student number in the indicated places on this questionnaire. You will not be graded on this questionnaire; your teachers will not even see your answers. Your honest answers are the only information we will have on this aspect of the course. Remember, this is for experimental purposes only.

Scale:

Scale values	Circle "A" if you agree with the statement. Circle "D" if you disagree with the statement. Please answer on this paper.
9	A D 1. This course is very beneficial to the majority of students who take it. ($P < .01$)
10	A D 2. I am very enthusiastic about this course. ($P < .01$)
2	A D 3. The benefits to be gained from this course hardly justify its existence. ($P > .05$)
3	A D 4. This course does not help students much. ($P < .01$)
4	A D 5. Not enough time is spent on each topic to get the full value of it. ($P > .05$)
7	A D 6. Some parts of this course are very worthwhile. ($P > .05$)
9	A D 7. This course does a good job in covering so much material so clearly. ($P < .01$)
5	A D 8. This course would be helpful if it were better organized. ($P > .05$)
6	A D 9. There are better courses than this and there are worse courses. ($P < .01$)
8	A D 10. This is a good course for college students to take. ($P < .01$)

7 A D 11. This course does a fair job. $(P > .05)$

2 A D 12. Students learn very little in this course. $(P < .01)$

5 A D 13. This course, no doubt, has some value for some people. $(P > .05)$

11 A D 14. If I were limited to taking only one course in college, I would select this course as that one. $(P < .01)$

2 A D 15. I don't see how anyone could ever like this course. $(P < .05)$

3 A D 16. This course is too vague. $(P < .01)$

1 A D 17. This course should be thrown out of the curriculum. $(P < .05)$

4 A D 18. The material taught in this course is not detailed enough. $(P > .05)$

8 A D 19. One should have no difficulty devoting attention to the classwork in this course. $(P < .01)$

11 A D 20. It would be hard for anyone to devise a better course than this one. $(P > .05)$

10 A D 21. This course makes a valuable contribution to a college education. $(P > .05)$

Students were not aware of the scale values of the items. Probability values refer to the results of the item analysis; items with values of P .05 and P .01 were used in the refined scale.

II. Teacher Attitude Questionnaire

General Instructions:

Instructions were those given for the Lehmann scale.

Questionnaire:

Read the sentence, then circle the appropriate number. Choose the number which best indicates the degree of your agreement or disagreement with the sentence.

*1. I am going to take another course from this teacher, if at all possible.

Strongly agree 1 2 3 4 Strongly disagree

*2. If I were planning to be a teacher, I would pattern myself after this teacher.

Strongly agree 1 2 3 4 Strongly disagree

3. To me, the teacher was the most significant thing about Guided Studies.

Strongly agree 1 2 3 4 Strongly disagree

4. Between classes, I found myself thinking, and/or talking with others about the teacher.

Strongly agree 1 2 3 4 Strongly disagree

5. I found myself wanting to be like her.

Strongly agree 1 2 3 4 Strongly disagree

6. I would recommend this teacher to a friend.

Strongly agree 1 2 3 4 Strongly disagree

*7. The most important thing about this teacher to me was the information I obtained from her.

Strongly agree 1 2 3 4 Strongly disagree

*8. I think of her as a nice person, rather than as a good teacher.

Strongly agree 1 2 3 4 Strongly disagree

Assigned values were arranged so that high values represented a favorable attitude. Items preceeded by an asterisk were those used in the final computations; probabilities for the items used were all $P < .01$.

III. Keister Questionnaire

Questionnaire:

1. Did you decide upon your major and career before coming to college?

yes no

2. Do your parents approve of your career choice?

yes no not sure

3. Do your parents approve of your being in college at West Virginia University?

yes no they express no comment

Responses were coded in such a manner that "yes" received the greatest weight, "no" the second, and "not sure" or "no comment" the least. "Yes" responses were set against all others for the item analysis and all resulting probabilities were less than .01.

IV. Activities Count

Question:

What were your extra-curricular activities in high school?

The score on this question represented the number of activities in which the student participated.

OE 6000 (REV. 9-66)

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OFFICE OF EDUCATION

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TITLE

Effects of Reading, Study Skills Improvement, and Reduced Credit Load on Achievement and Persistence of Failure Prone College Freshman: A Pilot Study

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RETRIEVAL TERMS

Reduced Load, reading improvement, study skills, academic achievement of marginal college students. Withdrawal, standardized achievement average.

IDENTIFIERS

ABSTRACT

The objective of the research program was to evaluate the effectiveness of a controlled or reduced academic load and a special reading-study skills course in the improvement of academic achievement and the reduction of withdrawal rates among entering college freshmen whose predicted academic achievement was below 2.0. The sample was selected from the 1964-65 entering freshmen class of West Virginia Univ. Criterion measures included (a) cumulative grade point averages; (b) a standardized achievement average which converted student performance in each course to a standard score basis; (c) rates of student withdrawal from the University calculated on a semester basis. The experimental design of the study was a simple 2 x 2 factorial design in which students with a predicted GPA below 2.0 were randomly assigned to one of four groups which included (1) the reading-study skills class and reduced academic load; (2) the reading-study skills class, but no reduction in academic load; (3) a reduced load, but no special class; (4) a control group which received neither the reading improvement-study skills course nor a required reduction in academic load. At the close of the first semester each of the criterion measures showed a significant difference in favor of those groups receiving the reading improvement-study skills course and significant interaction effects between the special course and the reduced load treatment. This apparent advantage was not in evidence by the close of the sophomore year, however, casting doubt on the long term effectiveness of such [redacted] measures. Also of special significance was the fact that the experimental group receiving only the reduced load treatment consistently achieved at the lowest level and below that found for the control group and had the highest rate of withdrawals. Apparently a reduced or controlled credit load when not combined with other positive remedial efforts, may have a ~~negative influence on student achievement.~~